

Environmental Good News

# U.S. Army Environmental Management Good News Stories:

## Volume II

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Vol II

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## **U.S. Army Environmental Management Good News Stories:**

### **Volume II**

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### **Abstract**

The U.S. Army has made a commitment to become a national leader in environmental stewardship. In recent years Army installations, Major Commands, and headquarters have implemented projects and programs that will enable the Army to live up to its commitment. These environmental accomplishments are often not recognized, either inside or outside of the Army. The original Army Environmental Policy Institute publication, *U.S. Army Environmental Management Good News Stories*, documented these accomplishments and gave the Army the credit it deserves for its efforts. This document is a continuing step toward the goal of providing a sampling of the numerous environmental efforts, programs and projects that are currently in operation or planned throughout all levels of the Army.

## Acknowledgments

The Army Environmental Policy Institute prepared this document under the direction of the Acting Institute Director, Mr. Robert Riggins. Principal authors were Ms. Kristan Cockerill and Ms. Jennifer Mitchell. Principal Researcher was Ms. Sarah Min. Ms. Roberta Cogen Miller and Mr. Christopher Jones coordinated final report production. The authors thank the many professionals at the installations, major commands, agencies, and headquarters who answered our requests for examples of good news. Without the support from the environmental professionals and public affairs offices, this document would not be possible.

Special thanks to Mr. Rudy Stine, FORSCOM Headquarters for initiating the concept of a good news document and to the Army Environmental Center, publisher of the *Environmental Update*, where several of these success stories were first publicized.

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## Introduction

*The Army will be a national leader in environmental and natural resource stewardship for present and future generations as an integral part of our mission.*

These words are the Army's vision for itself, as documented in the *U.S. Army Environmental Strategy into the 21st Century*. While these words, as a policy, are new, the Army has in fact been taking measures over the past several years to put this philosophy into practice. In early 1992, the Army Environmental Policy Institute (AEPI) began its first attempt to document environmental success stories from throughout the Army. The researchers on that project were inundated with responses from all levels within the Army that wanted to tell their stories. The Institute published its *U.S. Army Environmental Management Good News Stories* in June 1992 and in its first year of publication distributed more than 1500 copies. The success of that document prompted the Office of the Assistant Secretary of the Army for Installations, Logistics and Environment to request that AEPI publish an annual update to the good news publication.

## Purpose

This document is intended to provide insight into efforts at all levels within the Army covering all aspects of environmental and natural resource management. It is intended to provide information for other Army entities facing similar challenges. Where available, this document provides a point of contact for the story so that other installations and facilities can receive more details about the program or project if needed. It is also intended to serve as a public relations tool to enable the Army to point to its successes as it confronts the often hostile attitudes about its environmental record.

## Scope

The authors and researchers on this project queried more than 150 installations, Major Commands, agencies, and organizations requesting that they submit environmental good news stories. This search was limited to U.S. based military facilities and this document does not include civil works activities. It is a continuation of the first good news publication and therefore, information included in the original publication was not repeated unless significant changes or progress had been made on a program or project. It is by no means an exhaustive look at all of the initiatives in the field. The Institute plans to update it annually to provide the most current information on environmental good news from throughout the Army.

## Headquarters, Department of the Army

### Reorganization

In 1992, the Army announced its reorganized environmental structure. The new organization included making the Army Environmental Policy Institute a staff support agency reporting to the Office of the Assistant Secretary of the Army Installations, Logistics and Environment; appointing Brigadier General Gerald C. Brown as the first Army Director of Environment; and changing the name of the Toxic and Hazardous Materials Agency (THAMA) to the Army Environmental Center (AEC). This name change represents a consolidation of several functions that were previously performed separately. AEC responsibilities include environmental restoration, natural and cultural resource conservation and pollution prevention. General Brown is the first Army general officer whose primary responsibility is environmental management. The Director of Environment is responsible for headquarters environmental staff as well as for AEC. Additionally, in 1993, the Army created an Assistant Chief of Staff for Installation Management which will oversee the Directorate of Environment.

### U.S. Army Environmental Strategy

The Secretary of the Army and the Chief of Staff of the Army signed the *U.S. Army Environmental Strategy into the 21st Century* on November 19, 1992. This marked the culmination of two years of effort which included participation by more than 100 individuals from throughout the Army. The Army Environmental Policy Institute guided the development of this landmark document through many drafts, reviews, and final publication. The strategy, as signed, contains a vision for the Army to become a national leader in environmental stewardship and structures the Army environmental program under the four pillars of compliance, restoration, prevention, and conservation. The Army Environmental Center is charged with implementing the strategy.

## **Office of the Director of Environmental Programs, Virginia**

### **Strategic Plan for Drinking Water Management**

*POC: Michael Cain, (703) 696-8078*

The Office of the Director of Environmental Programs (ODEP), is developing Army Environmental Strategy Action Plans (ASAPs) to support the *U.S. Army Environmental Strategy into the 21st Century*. These plans, which support the compliance, restoration, conservation, pollution prevention pillars and foundation issues, include specific program goals, actions, and management indicators. The ASAPs provide a unity of direction and framework for the Army to systematically manage all facets of the environmental program.

## **U.S. Army Environmental Center, Maryland**

### **Environmental Training Plan**

*POC: Sue Thomas, (410) 671-1685*

Army Leadership officially approved the Army Environmental Training Master Plan in December, 1992. The plan is the Army's strategy for integrating environmental awareness and training into all levels of the Army school system, and for providing environmental training and other informational resources in non-classroom settings for appropriate unit and installation audiences.

A number of reports and studies by the U.S. Army and Department of Defense (DoD) Inspectors General, the U.S. Army Audit Agency, and others, indicated the need to improve and increase environmental training. Prior to these studies no coordinated effort to determine environmental training needs had been made.

The Army Environmental Center (AEC) prepared the master plan and will oversee its execution and prepare annual progress reports. The Environmental Division within the Huntsville Training Directorate operates an environmental training materials repository

and is assisting AEC in preparing training development recommendations. The Training and Doctrine Command (TRADOC) has assigned the U.S. Army Engineer School, Fort Leonard Wood, Missouri, headquarters to be the proponent for integrating environmental awareness into the TRADOC military school system.

## **U.S. Army Materiel Command, Virginia**

### **Hazardous Waste Reduction**

The U.S. Army Materiel Command (AMC) reduced its hazardous waste generation by 71 percent between 1985 and 1992. This accomplishment far surpasses the Office of the Secretary of Defense goal of a 50 percent reduction by the end of 1992. AMC reduced the quantities generated by approximately 13,500,000 kilograms in 1991 alone. The greatest reductions were from energetic materials manufacturing and munitions loading and assembling. Other major reductions were in the wastes generated from electroplating, painting, and cleaning and degreasing operations. Actions to reduce the quantities of sludge generated at wastewater treatment plants were implemented as well.

## **U.S. Army Depot System Command, Pennsylvania**

### **Environmental Protection Agency Award**

*(Excerpt from Environmental Update, October 1992)*

The Environmental Protection Agency (EPA) selected the U.S. Army Depot System Command (DESCOM) environmental program as a regional winner of its Administrator's Awards Program.

DESCOM Hazardous Waste Minimization Centers of Technical Excellence Program was selected from a field of 20 competitors within EPA Region III in the federal, state, local, and tribal governments category. This was the first time DESCOM participated in this

annual EPA competition, which highlights different areas of environmental progress each year. This year's awards focused on outstanding achievement in pollution prevention.

This program's emphasis was on meeting the overall Army goal to reduce hazardous waste 50 percent by 1992. DESCOM launched its hazardous waste minimization program by identifying six major waste streams for reduction, and assigning each stream to a depot for action.

The installations and the assigned waste streams were:

- Anniston Army Depot, Alabama: reducing industrial waste treatment plant sludges and petroleum degreasing solvents;
- Corpus Christi Army Depot, Texas: reducing aluminum conversion coating wastes;
- Letterkenny Army Depot, Pennsylvania: reducing chemical paint stripping wastes;
- Red River Army Depot, Texas: reducing chlorinated degreasing solvents;
- Sacramento Army Depot, California: reducing metal plating wastes;
- Tooele Army Depot, Utah: reducing paint wastes.

The depots formed task forces to research off-the-shelf technologies; to coordinate with all DESCOM installations to determine individual depot requirements; and to work closely with private industry, academia, and DoD research and development agencies, to identify and develop applications for new technologies.

This program produced a number of pollution prevention success stories. For example, Letterkenny Army Depot has worked to develop ways of reducing the amount and toxicity of wastes generated when old paint is removed from Army equipment before overhaul. As a result, filtration units installed on alkaline paint stripper tanks will reduce DESCOM's hazardous waste from caustic paint stripping by

more than 60 percent and will save about \$500,000 a year in waste disposal and new chemical costs.

## **U.S. Army Test and Evaluation Command, Maryland**

### **Environmental Documentation Process Guide**

*POC: Nicholas J. Cavallaro, (410) 278-1084*

On June 23, 1992, the U.S. Army Test and Evaluation Command's (TECOM) Environmental Quality Office (EQO) released an Environmental Documentation Process Guide which will assist TECOM test customers in complying with the National Environmental Policy Act (NEPA). The guide provides an overview of the levels of environmental analysis that the law requires; details information that TECOM test centers need to evaluate the environmental implications of proposed tests; and explains the purpose, procedures, and information required and common deficiencies often found in environmental documents. Following this guide streamlines the documentation process and eases the administrative burden of NEPA compliance.

The guide has been distributed to all materiel developers within AMC. EQO also routinely briefs the guide at various Joint Test Coordination meetings sponsored by TECOM and AMC commodity commands.

## **Office of the Surgeon General, Virginia**

### **Medical Department Environmental Management Plan**

*POC: Lieutenant Colonel Gary M. Bratt, (703) 756-0125*

In 1991 the Army established a program to identify medical hazardous waste requirements and discovered that there was great variability within the Army Medical Department concerning the way

environmental requirements were addressed and the level of environment-related training. In some cases, medical personnel were not familiar with available environmental programs or with the environmental personnel at installations or within their medical organizations. To address these problems the Office of the Surgeon General (OTSG) developed the U.S. Army Medical Department Environmental Management Plan. This plan encompasses the entire environmental program. It provides medical commanders with a comprehensive approach for identifying responsibilities and environmental requirements, and for addressing guidance to meet established Army and Army Medical Department environmental goals. OTSG staff coordinated this plan with the Army environmental community to determine what environmental programs and assistance were available and how to identify environmental programs.

OTSG is aiming to change its focus over time from compliance to pollution prevention. Compliance will become less significant as efforts are taken to eliminate or minimize the materials that create hazardous and medical waste. This plan is one step toward creating a better educated medical community that knows who to coordinate with concerning environmental issues, how to develop an integrated approach to preserving and protecting the environment, and this plan will help eliminate environmental health issues.

## **U.S. Army Environmental Hygiene Agency, Maryland**

### **The 60 Hz Initiative**

*POC: John DeFrank, (410) 671-4634/4834*

The 60 Hz Initiative, funded by OTSG in 1991, enabled the Army Environmental Hygiene Agency (AEHA) to address health concerns associated with extremely low frequency electric and magnetic fields from electric power distribution systems and electrically powered devices. Personnel can conduct on-site evaluations, including measurements when appropriate. Additionally, the annual Laser and Radiofrequency Radiation Hazards Workshop now includes an

instructional session on this topic. AEHA is also supporting efforts by the Institute of Electrical and Electronics Engineers and by EPA to develop exposure standards.

### **Off-Post Noise Impacts**

*POC: William Russell, (410) 671-3829/3797*

Following a request from Test and Evaluation Commander, Major General Richard Tragemann, AEHA assisted with public meetings hosted by the Kent County Commissioners in Chestertown, Maryland on April 7 and May 22, 1993. The focus of these meetings was to provide Kent County residents with an understanding of Aberdeen Proving Ground's environmental noise program and possible impacts. The Bio-Acoustics Division presented information and provided technical assistance to explain noise measurement, vibration effects, and possible damage to structures. The county commissioners and residents praised AEHA and the results of the meetings.

### **Technical Assistance to Fort Dix**

*POC: Mike Robison, (410) 671-3816*

In fiscal year (FY) 1991, Fort Dix requested that AEHA conduct a performance evaluation of an existing sewage treatment plant, that, before downsizing measures were announced, was to be replaced by a new plant. In December 1991, a citizens' group sued Fort Dix and the Secretary of the Army for non-compliance with a National Pollution Discharge Elimination System (NPDES) permit originally issued for the new plant. AEHA became the Army's and Fort Dix's technical consultants in the matter. AEHA performed a complete and extensive valuation of the treatment plant in the summer of 1992. Additionally, the agency developed a short-term plan to reduce phosphorus levels in plant effluent and played a key role in developing a settlement between the Army and the citizens' group. The agency's recommendations are now being implemented. AEHA's

help in the matter saved the Army hundreds of thousands of dollars in potential contractor costs and, due to the high visibility of the lawsuit, it elevated the status of the Army's environmental engineering abilities.

### **Wastewater Management, Army Materiel Command**

*POC: Bill Fifty, (410) 671-3816*

EPA's focus in wastewater management has shifted in recent years from a technology based approach to a water quality based approach. In that regard, most Army treatment facilities will have some form of bio-monitoring included in their new and/or revised NPDES permits. AEHA quickly recognized the need for a proactive strategy and focused their efforts on the Army's industrial base, AMC. AEHA plans to evaluate AMC wastewater treatment facilities prior to permit renewal or adverse regulatory scrutiny. The major elements of the plan include quarterly biomonitoring and phase one toxicity identification evaluations (TIE). Through data interpretation, AEHA will be able to identify strategies for AMC to eliminate toxicity, control wastewater sources, and prevent pollution. Using these methods, AMC will be able to control the toxicity of their discharges and improve receiving water quality prior to formal permit requirements or enforcement actions. AEHA will continue to remain an integral part of this program, providing the necessary technical and consultative support.

### **Audiovisual Lending Library**

*POC: Sandy Toscano, (410) 671-3651*

The AEHA Audiovisual Lending Library is providing videotapes to augment installation environmental training programs. The program, which initially served a few Army installations, has been expanded to also serve Air Force, Navy, Marine Corps, Reserve and National Guard activities worldwide. Through this program, installations have access to current video presentations on a wide variety of

environmental training areas. The library currently has more than 200 videotapes available. Leader's guides and lesson plans are available for many of these presentations. The tapes include such diverse topics as Environmental Laws and Regulations, Hazardous Waste Management, Contingency and Spill Response, and Confined Space Entry. There has been a significant increase in the use of the lending library during the past year. The library currently lends between 35 and 40 videotapes per month and has 300 regular users. The library is maintained by AEHA's Waste Disposal Engineering Division.

### **Support to STARS Missile Program**

*POC: Jeff Kirkpatrick, (410) 671-3651*

AEHA conducted air emission monitoring during a recent missile launch on the island of Kauai, Hawaii, in support of the Army Strategic Defense Command STARS Program. The data collected will be used to determine the health risk to installation personnel and nearby towns from the missile launches. The project maintains high visibility with local populace, Hawaiian environmental personnel, and the Hawaiian congressional delegation. The monitoring results show that the launch caused no adverse effects.

### **Hospital Incinerator Operator Training Course**

*POC: David L. Daughdrill, (410) 671-3500*

AEHA provided training for operators of hospital incinerators at Army installations. This annual course, sponsored by U.S. Army Health Services Command, is tailored to address Army needs and emphasizes operator responsibilities in assuring that incinerators are operated in compliance with environmental regulations. At a time when incinerators of any type are being increasingly scrutinized by regulators and the public, this course has enhanced awareness of environmental concerns and the vital role of the incinerator operator.

## Waste Management Workshops for Health Care Facilities

POC: Sandy Toscano, (410) 671-3651

Comprehensive hazardous waste, medical waste, and hazardous materials management workshops were held throughout the year at several locations both in and outside of the continental United States. More than 250 medical personnel were trained at four Waste Management Workshops; four workshops were held for Health Services Command and other medical personnel; and one workshop was held for the 7th Medical Command for U.S. Army Europe personnel.

Course topics included regulatory requirements, employee liability, hazard communication, blood borne pathogens, and hazardous and regulated medical wastes management practices. The course instructors, who came primarily from AEHA Hazardous and Medical Waste and the Health Care Hazards Programs, emphasized hands-on exercises and sharing practical solutions to common problems. The workshops were intended for military and civilian Health Care Facility (HCF) personnel who manage hazardous materials, wastes, or regulated medical wastes within an HCF.

## Command Staff Environmental Awareness Briefing

POC: Kris Durbin, (410) 671-3651

AEHA Waste Disposal Engineering Division developed a command awareness briefing during FY92 in order to build command support to ensure compliance with federal, state, and local environmental regulations. The briefing is designed to provide installation commanders and support staff with an awareness of environmental issues and concerns.

The briefings are conducted on an as-requested basis, on-site at the requestor's location. The briefing is typically given in conjunction with a regularly scheduled Environmental Quality Control Committee meeting. The briefing may include an overview of general environmental laws and regulations, hazardous waste regulations, environmental health issues, pollution prevention, and environmental

management responsibilities and liabilities. The actual content and duration is tailored to the requestor's needs.

## Aberdeen Proving Ground Trichloroethylene Episode

POC: Jerry Valcik, (410) 671-3919

The Director of Safety, Health, and Environment (DSHE) asked AEHA to assist in evaluating contractor options for safe drinking water from the Harford County Perryman wellfield in which trichloroethylene (TCE) had been detected. Some of the TCE may have come from the Aberdeen Proving Ground Fire Training Activity site. The presence of nitrate contamination in some of the wells, apparently of agricultural origin, has puzzled AEHA officials.

## Remedial Action Verifications

POC: John W. Bauer, (410) 671-2024

In August 1992, AEHA's first Remedial Action Verification (RAV) report was published. AEHA evaluated three former waste impoundments at Louisiana Army Ammunition Plant (LAAP). AMC Environmental Office recommends continuation of these efforts and endorsed these comments made by the LAAP: "The RAV provided an objective evaluation of the past closure actions and offered productive comments with regard to suggested future efforts as part of the Installation Restoration Program (IRP). We recommend the RAV initiative be continued at other installations to support the IRP program. The RAV can be a useful tool in the restoration efforts at AMC installations."

## Military Item Disposal Instruction System

POC: Dave Davis, (410) 671-3651

The Military Item Disposal Information (MIDI) System is designed to provide DoD personnel with disposal instructions for expired or otherwise unneeded items. The system contains disposal

instructions for more than 50,000 items used by DoD personnel worldwide.

The MIDI team's major accomplishment was the production and dispatch of more than 2,500 Compact Disk-Read Only Memory (CD-ROM) versions of the MIDI database. Patterned after the DoD Hazardous Materials Information System (HMIS) CD-ROM, this effort provided MIDI data in an electronic format to DoD users worldwide. For those locations without computer capability, Technical Guide No. 126, Waste Disposal Instructions, was revised and republished. It was mailed to more than 2,000 DoD clients worldwide. Both formats will be updated annually.

Additionally, disposal instructions were requested for 1,374 items via Defense Data Network or telephonically during the calendar year. Instructions were dispatched for 1,138 items. For items not included in the current database, efforts are underway to determine the proper disposal method. Instructions will be dispatched when completed.

## **U.S. Army Logistics Management College, Virginia**

### **Hazardous Waste Compliance Training**

*POC: William D. Hamilton, (804) 765-4626*

Since 1988, the U.S. Army Logistics Management College (ALMC) has successfully used the Historic Black College Professors Program to train large numbers of DoD personnel in the Defense Hazardous Materials/Waste Handling course and the Defense Hazardous Waste Course (refresher). College professors from Morgan State University, Maryland, with expertise in biology and chemistry, are hired as temporary federal instructors from June to August each year. These professors travel to on-site locations to conduct hazardous waste compliance training. Because of the large number of unprogrammed requests for training, the professors are Temporary Duty (TDY) almost all summer, traveling from installation to installation.

Many DoD installations are meeting their hazardous waste training needs in a timely, cost-effective manner due to this program.

## **Army Acquisition Pollution Prevention Support Office, Virginia**

### **Environmental Education Program**

*POC: Luis Garcia-Baco, (703) 274-0815*

The Director of the Army Acquisition Pollution Prevention Support Office (AAPPSO) launched a new environmental education program. During the first and second weeks of March 1993, AAPPSO presented a lesson program about the environmental consequences of ozone depletion to third and sixth graders at Fredericksburg, Virginia city schools.

With assistance from EPA, AAPPSO developed the initial lesson program. School teachers provided input to the program to ensure that the course material matched the students' education level. During the program, students participated by acting out the role of atoms of carbon, fluorine, and chlorine in molecules of chlorofluorocarbons (CFCs). Other students played molecules of ozone. In other play acting, one student, playing a chlorine atom, popped helium filled balloons to demonstrate the effect of CFCs on the earth's stratospheric ozone layer.

Fredericksburg city officials, school teachers, and students were enthusiastic about the initial lesson program. The mayor of Fredericksburg and the Superintendent of Schools attended one of the program lessons. The students took the lessons home; many students said they will only buy products free of harmful chemicals and others said they want to become scientists and find ways to protect the Earth.

AAPPSO made the lesson program material available to AMC Major Subordinate Commands (MSCs), including the Communication Electronics Command and the Army Research Laboratory. These MSCs expressed an interest in exporting the program to their local area school systems and communities. Additionally, the U.S. Air Force Office of Special Investigations has incorporated the

material into its recently initiated Environmental Crime Program that consists of educational presentations at local communities and schools.

## **Waterways Experiment Station, Mississippi**

### **Bioremediation of Explosives-Contaminated Soils**

*POC: Doug Gunnison, (601) 634-3873*

The Waterways Experiment Station (WES) is developing procedures to isolate microorganisms for use in bioremediation of explosives-contaminated soils. The basic research is supported by the Corps of Engineers Installation Restoration Research Program (IRRP).

Procedures developed to date enable the investigator to detect the presence and activity of native microorganisms capable of degrading trinitrotoluene (TNT) in explosives-contaminated soils. WES researchers are also attempting to isolate individual microorganisms and consortia (groups of effective microorganisms) in order to apply them to soils.

Working with investigators at the U.S. Army Natick Research, Development, and Engineering Center, WES researchers are also examining the processes used by the microbial isolates to destroy explosives and the waste products that are released into the environment as a result of this activity. In addition, WES and Natick are studying environmental factors, such as temperature, pH, and nutrient concentrations, to determine their effect on the amount and rate of explosives destruction.

The microbial isolates that are obtained are rapidly applied to other IRRP work units concerned with soil bioremediation. Areas presently being studied include in situ biotreatment and bioslurry reactor treatment of explosives-contaminated soils. Based on the results of these projects, bioremediation may offer a cost-effective alternative to incineration for cleanup of explosives-contaminated soils. The research is expected to be concluded and placed in use in FY96.

## **Fort Benning, Georgia**

### **Environmental Concerns in Motor Pool Operations**

The Environmental Management Division of the Directorate of Public Works at Fort Benning developed an environmental training seminar called "Environmental Concerns in Motor Pool Operations." On March 21, 1993, the 1st Battalion, 29th Infantry Regiment hosted a training seminar at Fort Benning. This course provided training on hazardous material management and hazardous waste disposal procedures that are necessary for all personnel involved in motor pool operations. Approximately 100 brigade and battalion commanders and division chiefs attended. Course leaders emphasized the important role the Army plays in the environmental arena and in training. Commanders were exposed to a series of situations where subject matter experts pointed out common areas of non-compliance. Speakers spelled out the commanders' responsibilities under the Federal Facilities Compliance Act and cited legal ramifications of environmental non-compliance. These include fines as high as \$25,000 per violation per day and potential civil and criminal liability. Among the topics addressed at the seminar were: spill prevention and contingency planning; proper storage of hazardous materials and waste in the motor pool; hazardous waste disposal procedures; protective equipment; and hazardous operations in the motor pool.

## **Fort Bragg, North Carolina**

### **Red-Cockaded Woodpecker**

*(Excerpt from Environmental Update, January 1993)*

Thanks to the joint efforts of Army officials and the U.S. Fish and Wildlife Service, an endangered species of woodpecker stands a much better chance of thriving at Fort Bragg and in the Sandhills region of North Carolina. The red-cockaded woodpecker, native to Southern pine forests, has been protected since 1973. The law requires federal agencies to protect and manage endangered or threatened

species on federal lands. More than 400 red-cockaded woodpecker colonies were located and mapped throughout a wooded area of about 115,000 acres at Fort Bragg. A \$20 million training range at Fort Bragg was closed at the end of October 1991 to avoid jeopardizing the woodpecker. The Army agreed to make the range more hospitable to the red-cockaded woodpecker and to spend \$400,000 to protect the bird's habitat on the installation. Protection measures included building 45,000 cubic yards of earthen berms to provide backstops for ammunition during live fire exercises, relocating some demolition activities, changing the direction of some shooting ranges, and revising procedures for firing live ammunition. The range was successfully reopened during the summer of 1992.

In September 1992, the Army and the U.S. Fish and Wildlife Service sponsored a three-day conference on the red-cockaded woodpecker. Military and civilian experts, post residents and others interested in the environment met to discuss Fort Bragg's program and future protection of this species.

### **Cultural Resources**

Fort Bragg completed a Historic Preservation Plan (HPP) in 1988 to guide cultural resource management efforts. There are approximately 5,000 archaeological sites on the installation. Proposed construction sites are routinely surveyed for cultural resources. Two historical 19th century churches on the post have been restored. An ongoing research project will conduct an archaeological survey at a Civil War battlefield on post. The site will be used to teach tactics using an authentic historical example.

### **Environmental Training**

Fort Bragg conducts monthly training programs for unit-level environmental coordinators. The course is intended to foster an environmental stewardship ethic. Proper hazardous waste handling, turn-in, and management procedures are emphasized. Videos have been produced to define the environmental program and explain endangered species requirements to soldiers. Environmental requirements have been incorporated into the Fort Bragg regulation which

governs training. These requirements are also part of the weekly training briefings given at Range Control.

### **Hazardous Waste Management**

Reductions in hazardous waste production have been largely due to paying attention to how hazardous materials are managed. This included several initiatives such as identifying nonhazardous substitutes for hazardous materials and banning hazardous materials for which a suitable substitute had been identified. Fort Bragg spent considerable time and effort working with the Defense Reutilization Marketing Office (DRMO) to identify potential markets for hazardous materials which could be sold instead of being disposed of as waste. Organizations were given an incentive to use hazardous materials wisely by tracking hazardous waste disposal costs by the unit supply code and billing the military unit for the cost of disposal.

### **Natural Resources**

#### *Forestry*

Fort Bragg's Forest Management Plan favors native species in all activities. Forest product harvests are coordinated with troop training, endangered species recovery efforts and watershed management goals. The installation harbors some of the largest and best maintained stands of longleaf pine in the southeastern United States. These pines have flourished here while becoming rare throughout the Southeast because of the installation's long standing policies to encourage native trees. Management efforts include prescribed burning and "let-burn" policies. Surplus forest products are harvested and sold off the installation only after full coordination to ensure that the harvest enhances the ecosystem.

#### *Wetlands*

Together with the U.S. Fish and Wildlife Service, Fort Bragg conducted an inventory of its wetland areas, including large areas located off post. The inventory is complete and is used to manage and preserve these resources.

## **PCB Management**

Fort Bragg completed a survey in June 1990 to determine the polychlorinated biphenyls (PCB) level of the more than 3,000 transformers and oil switches on Fort Bragg, Simmons Army Airfield, and Camp Mackall. PCB transformers are being switched out systematically. The installation has implemented a tracing system to keep up with transformers removed and replaced. All transformers have been labeled with their PCB content. The installation expects to have all PCB transformers replaced by the end of FY94.

## **Solvent Recycling**

Using a solvent recycling service, Fort Bragg recycles approximately 60,000 gallons of solvent annually. This saves Fort Bragg more than \$400,000 in disposal costs and protects the environment by decreasing the amount of new solvent purchased and the hazards inherent in hazardous waste disposal.

## **Waste Motor Oil Recycling**

Fort Bragg uses waste motor oil as fuel for the 82nd Airborne Division heating plant. This provides approximately 300,000 gallons of fuel for the plant annually. Prior to collection, the used oil is tested for chlorinated solvents to ensure that it is fit for use as heating oil. Recycling the waste oil saves money and protects the environment by decreasing the need for virgin fuel and eliminating a disposal issue for the oil. The testing process also serves as a check to ensure that chlorinated solvents are not improperly used or disposed.

## **Fort Devens, Massachusetts**

*POC: Ronald Ostrowski, (508) 796-2393*

### **Earth Day**

On April 23, 1993 Fort Devens hosted Earth Day, with several activities designed to raise environmental awareness on the installation. One of these activities was a day-long household hazardous material turn-in to the environmental office. Housing residents were encouraged to turn-in hazardous material they might otherwise throw away, and were free to take items they could use. This reuse promotes waste minimization and saves the soldiers money.

### **EPA Inspection**

In July 1992, two noncommissioned officers (NCOs) were assigned to the Fort Devens Environmental Office solely to conduct monthly quality control inspections of every hazardous waste generator on the installation. In the past 10 months this inspection team has conducted more than 350 inspections, greatly improving environmental compliance on Fort Devens. Inspection results are forwarded to each activity Commander/Director, and deficiencies are re-inspected the following week. The success of this program is reflected in the reduced number of violations Fort Devens received. While the installation received 14 Resource Conservation and Recovery Act (RCRA) violations on its 1991 annual state/EPA inspection, in 1992 it received none.

## **Fort Eustis, Virginia**

### **Renovation of the Matthew Jones House**

*POC: Bob Anderson, (804) 927-2077*

Fort Eustis, the Norfolk Corps of Engineers, the National Park Service, and the College of William and Mary cooperated on the

renovation of the Matthew Jones House at Fort Eustis. Originally built in 1727 and expanded in the 1800s, the home is now thought to be the last example of an earth-fast foundation in Virginia and one of only two or three such structures in the United States. This was the predominant architectural form of the colonial period, making the Jones House one of the most important colonial structures in Virginia.

The building will begin its new life as a museum and architectural exhibit. The Army has been commended for preserving the structure which, while having no military historical significance, is a rare example of the American colonial heritage, and is therefore a cultural resource.

## **Holston Army Ammunition Plant, Tennessee**

*POC: Michael B. Mills, (615) 247-9111 ext. 3754*

### **Fuel Oil Donation**

Holston Army Ammunition Plant (HAAP) had 850,000 gallons of unneeded fuel oil, which it donated to the state of Florida. Through this donation, Auburn University was able to receive the oil through state processes. The university successfully retrieved the oil and transported the material to users in various places. This action avoided the need to use DRMO which was going to charge HAAP hazardous waste costs (approximately \$1.50 or more per gallon) for oil disposal. This effort resulted in beneficial use of the oil and cost avoidance of more than one million dollars.

### **Nature Conservancy Studies**

HAAP has an agreement with the Tennessee Nature Conservancy (TNC) to conduct a survey of Holston property to identify endangered species. TNC began the survey in late 1991 and continued through November 1992. TNC found a plant species and more than 10 animal species on Holston Plant property which are rare or are of special concern in Tennessee.

HAAP is working with biologists from Lincoln Memorial University to help manage its deer population. It also has a bird

reserve for a variety of ducks and Canada geese in the area. HAAP is committed to obtaining sufficient resources to continue the preservation of the area's flora and fauna.

### **Process Conversion**

HAAP implemented a change in process that will protect the environment and save money. The installation converted from a sodium nitrate process to a ammonium nitrate process. This change converted what may have been designated a waste stream to a successfully marketed by-product stream. The conversion was completed within a short time, eliminated a real potential for causing a plant shut down, and turned an expected DRMO enormous disposal cost into a money-making opportunity.

### **Service Station Above Ground Storage Tanks**

HAAP Service Station installed new above ground tanks (two 10,000 gallon gasoline and one 8,000 gallon diesel fuel) in the spring of 1993. The old tanks will be removed and disposed of within a year. The new tanks have been placed inside a diked area. The feed lines to the tanks have been double-lined and sloped to allow any line leaks to be drained back into the diked area for discovery, recovery, and treatment.

Underground leaking fuel lines are a significant source of contaminated soil and contaminated groundwater throughout the country. This new installation will prevent ground contamination from buried, leaking fuel lines.

## **Fort Hood, Texas**

*(Excerpt from Environmental Update, January 1993)*

### **Recycling Program**

In January 1993 Fort Hood renewed emphasis on its recycling program. To underscore the importance of the program, the installation's commander, Lieutenant General H.G. Taylor III, ap-

pointed himself as Fort Hood's environmental protection officer and named recycling one of his top priorities. He established an installation recycling council and on-post recycling operations were expanded.

The goal of this program is to reduce the amount of waste flowing into Fort Hood's landfill and capture recyclable material. In the past year, sales of recyclable material have generated about \$750,000 for Fort Hood. The goal for 1994 is to earn one million dollars through recycling. Much of the money earned goes toward running the program and into capital investments, such as purchasing pumper trucks to collect waste oil.

The installation has also spent recycling earnings to improve quality of life on the post. For example, recycling dollars have built a new Teen Center, a basketball court for the Teen Center, and have been used to purchase some replacement equipment for Fort Hood's physical fitness centers.

Expanded recycling operations include relocating the recycling center to a larger facility, purchasing a new paper baler and glass crusher, and a program for mandatory recycling in all post housing areas.

### Spring Clean-Up Week

One of Fort Hood's recent environmental successes was its spring clean-up week in conjunction with Earth Day in 1992. Soldiers, civilians, and families worked throughout the week to collect trash and beautify their homes, barracks, offices, and training areas. The effort produced 121,000 pounds of recyclable material, 22,000 pounds of hazardous waste, and 405,000 pounds of material turned to the Fort Hood DRMO.

### Compressed Natural Gas

One of the most promising programs recently launched at Fort Hood involves converting the post's administrative vehicles from conventional fuels to compressed natural gas (CNG).

Initial estimates indicate the conversion could significantly cut fuel costs for the installation, since CNG costs only about half as

much as gasoline, yet provides about equal performance in properly converted vehicles. The primary purpose, however, is to decrease air pollution generated by fuels currently in use.

### Hazardous Waste Yard

Fort Hood generates about 350,000 pounds of hazardous waste annually. To manage the problem of proper disposal of products such as paint wastes, contaminated solvents and fuels, the installation constructed a hazardous-waste yard. The yard was originally established during the deployment of the Desert Storm units to expedite hazardous waste turn-in.

Today it continues to accept hazardous waste products on a "no questions asked" basis year round. The yard removes usable material from the waste it receives and neutralizes hazardous materials to an inert, non-hazardous state. This program has reduced the amount of dangerous materials turned in to DRMO by almost 50 percent annually.

### Black-Capped Vireo and the Golden-Cheek Warbler

Fort Hood is home to the black-capped vireo, the golden-cheek warbler, and several species of cave invertebrates, which could soon be added to the endangered species list.

When the installation determined that Army activities could adversely affect the black-capped vireo and golden-cheek warbler, a plan was designed which included guidelines to protect endangered plants and animals. Additionally, formal consultation with the U.S. Fish and Wildlife Service is expected to balance the needs of Fort Hood to vigorously train with the obligation to protect endangered species.

## **Illinois National Guard**

### **Environmental Awareness**

*(Excerpt from Environmental Update, January 1993)*

Units from the Illinois National Guard train at Fort McCoy, Wisconsin. In response to more stringent solid waste regulations, Fort McCoy has been implementing proactive recycling measures. In the summer of 1991 the Illinois Army National Guard established a central point of contact and sent representatives out to their units to explain Fort McCoy's environmental rules and regulations, including recycling efforts. This effort reflects that it is possible to conduct training and protect the environment simultaneously.

## **Iowa Army Ammunition Plant, Iowa**

*POC: K.R. Miller, (319) 753-7540*

### **Metal Recovery**

In accordance with Iowa Army Ammunition Plant's (IAAP) efforts to become the Army's Midwest Demilitarization Facility, IAAP designed, produced, and installed two M605 fuze recycling barricades in 1992. The M605 fuze, used primarily in M16 mines, produces metal waste when detonated. IAAP M605 barricades serve to capture the wastes released. The metal recovered is sold as salvage, thereby exempting the barricades from being regulated as RCRA hazardous waste treatment units. IAAP's design of a closed chamber detonation and recycling mechanism also controls air emissions, to ensure compliance with regulations.

### **Solvent Reduction**

IAAP continues to reduce the amount of used solvents that must be disposed of as hazardous waste. In 1991 and 1992, 1,485 gallons of used solvents were shipped to Safety-Kleen at Dolton,

Illinois for recovery. These recovered solvents were sold by Safety-Kleen for use by others. Also in 1991 and 1992, 4,170 gallons of unrecoverable used solvents and 3,450 gallons of used oil were shipped to Continental Cement Company in Hannibal, Missouri through a broker, to be used as supplemental fuel in an EPA approved cement kiln. The used oil is transported and accepted at no cost to IAAP. The use of solvents and used oil as supplemental fuel not only reduces the demand for virgin fuels but also eliminates the additional costs associated with treating solvents as hazardous waste in a high temperature incinerator.

### **Regenerated Carbon**

Regenerated carbon was recently used at IAAP in carbon filter columns for the first time and performed satisfactorily. Explosive contaminated carbon is shipped to Envirotrol Inc. at Sewickley, Pennsylvania for regeneration. The program substantially reduces the amount of new carbon purchased, eliminates the need to treat approximately 10,000 pounds of carbon each year in the explosive waste incinerator, and eliminates the need to dispose of 40 to 50 drums of carbon per year as hazardous waste. Rather than incinerating the carbon, dispensing of the ash as hazardous waste, and purchasing virgin carbon, IAAP now regenerates the carbon off-site and returns it for re-use. This procedure saves an estimated \$23,885 annually.

### **Voluntary Reduction Program**

In May 1992, IAAP's operating contractor, Mason & Hanger-Silas Mason Co., Inc., was awarded a Certificate of Appreciation for participating in the EPA Voluntary Reduction Program. This program involves industry that volunteers to reduce a targeted group of chemicals 33 percent by 1992 and 50 percent by 1995 based on 1988 values. IAAP has reduced the use of 111 trichlorethane 50 percent, and has plans to completely eliminate overall use of CFCs on the facility.

## Recycled Scrap Explosive Materials

IAAP has for many years been engaged in extensive efforts to re-use scrap explosive materials, and to find a use for them in different applications to reduce the quantity of waste. Additionally, IAAP continually searches the market. IAAP continually searches the market to sell explosives and other materials to approved buyers. If the scrap explosives are not re-used or sold, they require treatment in the explosive waste incinerator as hazardous waste. The cost benefit from selling scrap explosives to approved buyers versus incinerating and disposing of the ash is presently being evaluated. Between 1983 and 1991 the installation amassed a total of \$906,015 from scrap explosive sales.

## **Fort Irwin, California**

### Sierra Club Conservation Award

*(Excerpt from Environmental Update)*

The National Training Center (NTC) and Fort Irwin received the 1992 Conservation Award from the Los Serranos Group of the Sierra Club. NTC earned the award for its geothermal research and development program.

Fort Irwin began geothermal research and development during the summer of 1990. The installation is an ideal location for tapping into geothermal energy because of the many secondary geological faults located on post. The concept of geothermal energy lies in using hot water found in the earth to create electricity. A geothermal plant takes this superheated water from within the earth's crust, brings it to the surface, and then uses the steam to turn turbines that produce electricity.

Lieutenant Colonel David Schnabel, Fort Irwin's Director of Public Works, said the Sierra Club's conservation award was a significant recognition of the many years of effort by Fort Irwin. Fort Irwin should be using geothermal energy by the fall of 1994.

## **Fort Jackson, South Carolina**

*POC: Carol Sammons, (803) 751-6854/5011*

### Sensitive Species Management

The Nature Conservancy conducted an installation-wide endangered species survey at Fort Jackson. Biologists surveyed all accessible areas of the installation for potential federal and state endangered and threatened plant and animal species. Two endangered plants were identified—the smooth coneflower and the rough-leaved loosestrife. The Land Management Branch is preparing management plans for the two plants. Additionally, the Fort Jackson Fish and Wildlife Branch implemented the management plan for the red-cockaded woodpecker. This plan ensures that the endangered bird and its habitat are being managed in accordance with the U.S. Fish and Wildlife Service Recovery Plan. In efforts to increase the current population, cavities are being constructed to provide areas within unoccupied cluster sites to encourage the formation of new breeding groups. In addition, 3,000 acres of red-cockaded woodpecker habitat was improved by controlling mid-story encroachment and prescribed burning. Activities have also been initiated to conserve other sensitive species like the Southeastern kestrel and Rafinesque's big-eared bat.

### Waterfowl Management Activities

Fort Jackson's wood duck nest box program has been recognized as one of the most successful programs in the state of South Carolina. There have been in excess of 1,000 wood ducks produced annually from the nest boxes located on the installation over the past few years.

### Soil Erosion Control

Soil erosion is one of the most significant environmental problems on Fort Jackson, and siltation is a major contributor to non-point source pollution. Because of excessive soil erosion, compliance with various federal and state laws and regulations governing sedi-

mentation and water quality is a major concern. In addition to environmental concerns, this excessive erosion has interfered with access to training areas and hinders training on damaged lands. Through an Interagency Agreement with the Soil Conservation Service (SCS), 13 sites that were identified as having excessive erosion and/or water quality problems were remediated. SCS provided designs and construction inspection, while a private contractor conducted the actual construction. Conservation measures included establishing permanent vegetation, mulching, diversions, water bars, sediment basins, grassed waterways, and drop structures. The project was such a success that the Interagency Agreement with SCS was extended through FY96.

### **Oil Contaminated Soils Bioremediation**

Removing the underground storage tanks (USTs) at Fort Jackson in FY92 yielded approximately 1,500 cubic yards of petroleum contaminated soil. This soil was sent to the sanitary landfill for bioremediation. The bioremediation process included nutrient enrichment and aeration to enhance the microbial degradation of the petroleum products. The treatment took approximately eight weeks. An independent laboratory analyzed the soil samples to confirm the proper treatment of the soil. The successfully treated soil can be used for landfill cover material which will save the installation money.

### **Paint and Solvent Management**

To eliminate the storage and stockpiling of paints, Fort Jackson initiated an amnesty period for units and activities to turn in all paints and associated solvents. Usable products were returned to the U-Do-It-Center, nonusable products were properly disposed, and units were limited in the amount of paints and solvents they could order. Installation design guides were initiated to limit interior paint colors to three choices and exterior paint colors to five choices, and only lead free paints were purchased.

### **Moncrief Hospital's Hazardous Waste Minimization**

In order to reduce the amount of chemotherapy-related hazardous waste, Fort Jackson's Moncrief Army Hospital collected all gloves, gowns, pads, and intravenous disposables that had come into contact with a chemotherapy drug prior to July 1990. Hospital personnel determined that of the approximately 20 different chemotherapy drugs used by the hospital, only two generated a hazardous waste. In July 1990, hospital personnel began separating the items that had been in contact with these two drugs. Today, in spite of an increased use of chemotherapy drugs, the hospital has reduced the amount of these drug related hazardous wastes by 99 percent.

### **CFC Management**

Fort Jackson has designed a project to replace CFCs with halogenated chlorofluorocarbons (HCFCs). It has also initiated a program to purchase CFC-free equipment to use for normal replacements. In addition, halon fire suppression systems are being replaced with water sprinkler systems.

### **Hazardous Waste Management Training**

The Environmental Management Branch regularly conducts Hazardous Waste Management training classes for all Fort Jackson personnel and contractors. These classes focus on general hazardous waste management compliance, but the individual classes are tailored to the activities' specific needs. Personnel successfully completing the class are awarded training certificates for their personnel records.

The training in hazardous waste management has played a major role in improving the installation's record in state and federal inspections. Creating an Environmental Compliance Officer (ECO) in each unit also contributed to this improvement. The ECO ensures compliance within the unit and acts as a liaison between the Environmental Management Branch and the unit.

## **Fort Leonard Wood, Missouri**

### **Environmental Awareness Training Support Packages**

*POC: Pete Kushnir, (804) 727-2265*

The U.S. Army Engineer School, Fort Leonard Wood, has completed 13 Environmental Awareness Training Support Packages (TSP). TSP are designed to impart environmental awareness training from the initial entry level to pre-command courses.

## **Letterkenny Army Depot, Pennsylvania**

### **Contaminated Soil Removal**

*(Excerpt from Environmental Update, October 1992)*

Workers at Letterkenny Army Depot removed 28,000 tons of contaminated soil in two former industrial waste treatment lagoons. These lagoons, located near the depot boundary within one of the depot's two National Priorities List (NPL) sites, were a primary source of groundwater contamination and were the subject of a Focused Feasibility Study completed in the spring of 1992. The soil under the lagoons was contaminated with volatile organic compounds, dichloroethylene and trichloroethylene. In a joint decision with EPA and the Pennsylvania Department of Environmental Resources, Letterkenny chose to treat the contaminated soils with a low-temperature thermal system.

Since January 1992, the concrete lagoon liners from the lagoons have been broken up, pressure washed, and removed from the site. The underlying contaminated soils were excavated and off-loaded onto the treatment unit conveyor. Once inside the unit, the soils were heated in a rotary kiln to a temperature between 600 and 800 degrees Fahrenheit, which caused the volatiles to be released. The volatiles then went into a secondary burner where they were destroyed at approximately 1,650 degrees Fahrenheit. Once all contaminated soils from the lagoons were treated, the washed concrete liners were

returned to the excavation site, covered with the treated soils, and a permanent cap made of high-density polyethylene (a vinyl plastic) was placed over the site to prevent rain infiltration. Finally, fertile soil was laced over the cap, and the site seeded. The treatment was completed in July 1992.

## **Fort McCoy, Wisconsin**

### **Recycling Program**

*(Excerpt from Environmental Update, January 1993)*

The Fort McCoy recycling program is meeting, or in the process of meeting, more stringent standards proposed by Forces Command (FORSCOM) and the state of Wisconsin, including recycling 25 percent of their solid waste by 1992, increasing to 35 percent by 1994, and to 50 percent by the year 2000.

Fort McCoy is planning to begin recycling steel cans during the training season. Installation personnel estimate that during a two-week annual training session, a 100-member reserve unit will use approximately 575 steel cans. New items are being added to the recycling program to help installation personnel adjust to the practice. Following the steel cans, the installation will begin recycling plastic and glass products.

A one-year solid waste study of the cantonment area also will identify potential areas where recycling can be introduced, increased, or another disposal method used. The preliminary results of the study indicate that paper, styrofoam, and plastic food containers make up the biggest percentage (20.38 percent) of solid waste still being discarded.

Plans have been made to build a recycling building near the installation's solid waste transfer system. This will ensure that people who bring recyclable material to the transfer building can be rerouted to the recycling building assuring that the material is recycled. A recycling committee has been formed to help the post plan its future recycling activities.

## **Fort Ord, California**

*POC: Joe Cochran, (408) 242-4505*

### **Western Snowy Plover**

The western snowy plover was federally listed as threatened on March 5, 1993. Fort Ord has been working cooperatively with the Point Reyes Bird Observatory since 1988 in searching for nests, and constructing fences around the nests to protect the eggs and vulnerable birds from predation. Fort Ord will continue to work with Point Reyes Bird Observatory to protect this sensitive species and is currently working with the U.S. Fish and Wildlife Service to develop other protective measures.

### **Hazardous Waste Minimization Incentive Award**

Fort Ord received a \$25,000 award from the Secretary of the Army for its commitment to hazardous waste minimization. Fort Ord has successfully reduced the generation of hazardous wastes from paint stripping and degreasing by substituting less hazardous materials. In addition, Fort Ord has educated its military and civilian work force in the proper handling of hazardous materials.

### **Biological Remediation**

Fort Ord is implementing an innovative biological soil remediation system to accelerate the cleanup of contaminated sites. This system will use an existing soil and groundwater treatment system at a former fire drill burn pit to treat hydrocarbon-contaminated soil removed from other contaminated sites throughout the base. Rather than developing new remediation systems for other sites at Fort Ord, the existing system will be upgraded, thus significantly reducing remediation time and cost.

## **Fort Polk, Louisiana**

### **Soil Decontamination**

*POC: Jackie Smith, (318) 531-7934*

The landfarming technique used at Fort Polk to treat contaminated soil has been so successful that its operating permit has been extended indefinitely. Under the original permit, the landfarm was scheduled to cease operations in 1993 and close in 1994. Now, the installation can continue to use the 8.25 acre landfarm as long as the treated soil/sludge continues to meet the permit standards for heavy metal residues, organic matter content, degraded material texture, and phytotoxicity test results.

Landfarming is a method to decontaminate soil polluted by petroleum, oil and lubricant (POL) spills, and digested sludge from sewage treatment plants. Also known as hydrocarbon landfarming, the process mixes waste with "unfouled" surface soil. Harmful substances in the waste are decomposed by the aerobic bacteria in the soil. In 1989, the operating permit was modified to allow Fort Polk to use the reconditioned soil as landfill cover to support vegetative growth.

Since 1987, the landfarm has treated 5,569 tons of POL-contaminated soil and 2,269 tons of digested sewage sludge. The landfarm paid for itself during its first year of operation. Fort Polk has saved more than \$1.1 million by decontaminating this waste at the landfarm rather than landfilling it.

## **Radford Army Ammunition Plant, Virginia**

*POC: Shelley Barker, (703) 639-8482*

### **Environmental Study**

On April 8, 1993, Radford Army Ammunition Plant (RAAP), in cooperation with scientists from two local universities, finalized a draft study proposal by AEHA. The study will be used to determine

if 2,4-dinitrotoluene (DNT), an explosive compound, has accumulated in river wastewater discharges. Because this data is not available and there is community interest in this issue, RAAP has formed an independent committee and secured AEHA to conduct the study. Plans for the study, scheduled for the fourth quarter of 1993, have been well received by the environmental community.

### **Environmental Day**

To celebrate the signing of the *U.S. Army Environmental Strategy into the 21st Century* and continuing commitment to environmental stewardship, RAAP held an Environmental Day fair on February 5, 1993. More than 30 exhibitors and participants set up displays covering all aspects of environmental awareness. Exhibitors included universities, consulting firms, state and local government agencies, environmental groups, private companies, environmental folk musicians and the operating contractor at RAAP. Special guests included a red-tailed hawk, a black turkey vulture, a screech owl, and hundreds of honey bees. Smokey the Bear and Woodsey Owl were on hand as well. Environmental Day at RAAP exemplified the Army's continuing commitment to environmental stewardship and community involvement.

### **Fort Ritchie, Maryland**

*POC: William D. Hofmann, (717) 878-4159*

### **Hazardous Material/Hazardous Waste Closet Cleaning**

In October 1992, 30 drums, totaling approximately nine tons of mostly hazardous materials/wastes, were accumulated and removed from Fort Ritchie, Maryland and the Fort Ritchie Raven Rock Site in Pennsylvania. This action concluded months of effort collecting, sorting, and categorizing more than 600 different line items. Most of the waste was either incinerated or recycled. This major house cleaning removed all known out of service hazardous materials from Fort Ritchie and Raven Rock Site and served as important ground

work for an effective hazardous material management and minimization program.

### **Household Chemical Exchange Program**

In May 1992, Fort Ritchie's Environmental Management Division (EMD) and Army Community Services (ACS) jointly established a household chemical exchange program designed to benefit Fort Ritchie residents and the environment. Departing families or single soldiers are asked to give any household chemicals/cleaners that they would otherwise discard to ACS. These items then become available to other Fort Ritchie residents at no cost.

### **Rock Island Arsenal, Illinois**

#### **Drum Recycling and Disposal**

*POC: Jim Dockery, (309) 782-5250*

Due to the continued stringency of EPA regulations covering used drum reclamation, fewer and fewer companies are refurbishing drums. Consequently, it has been difficult to find a reputable drum reclaiming company near Rock Island Arsenal (RIA). Disposing of the drums at a landfill is not only costly but environmentally unsound. Therefore, RIA has started a program to clean, crush, and melt its steel drums through the Arsenal Operations Directorate foundry. In some cases after being cleaned and crushed, the drums may also be sold to a recycling company.

#### **Recycling Program**

*POC: Tim Dugan, (309) 782-4752*

RIA has an active recycling program complete with an operation center. The program accepts cardboard, newspaper, aluminum cans, steel/tin cans, clear glass, milk jugs, and #2 colored plastic to be recycled. RIA also offers curbside recycling to on-post residents, and

employees are encouraged to bring their recyclables from home and drop them off at the recycling center.

During FY92 RIA recycled 138,000 pounds of cardboard, 1,574 pounds of paper, and 7,993 pounds of aluminum cans. Since the recycling center opened, 18,000 pounds of clear glass, 1,700 pounds of milk jugs, 4,200 pounds of steel/tin cans, 1,000 pounds of #2 colored plastic, and 114,740 pounds of newspaper have been recycled.

## **Rocky Mountain Arsenal, Colorado**

### **Wildlife Refuge**

*(Excerpt from Environmental Update)*

The Rocky Mountain Arsenal Wildlife Refuge Act of 1992, enacted October 9, 1992, allows Rocky Mountain Arsenal (RMA) to be incorporated into the National Wildlife Refuge System. This transforms the installation into the nation's largest urban wildlife refuge. Under the act, the U.S. Fish and Wildlife Service will manage RMA for wildlife and public use purposes as if it were a wildlife refuge, until ongoing cleanup efforts are complete. The cleanup is expected to take at least a decade. The Department of the Interior and the Department of the Army signed a Memorandum of Understanding to implement the act in January 1993.

RMA is home to a winter roosting population of endangered American bald eagles, as well as the ferruginous hawk and the burrowing owl, which are candidates for listing as threatened or endangered. A large variety of other fish, bird species, and wildlife, including white-tail and mule deer, coyotes, and prairie dogs, also reside at RMA.

## **Sacramento Army Depot, California**

*POC: Roxanne Yonn, (916) 388-2324*

### **National Priorities List and Technical Review Committee**

Sacramento Army Depot expects to be the first DoD facility to be removed from the NPL. Its industrial operations are centered around maintaining and repairing communications and electronic equipment, and involve painting, metal plating and machining. Wastes from these operations were disposed of using accepted practices at the time. Unfortunately, these practices created contamination and led to the depot being listed on the NPL in 1987. In 1988, the U.S. Army, EPA, and the California EPA signed a Federal Facilities Agreement (FFA), outlining a plan to effectively manage the depot cleanup.

To meet the challenge of the pending cleanup, a Technical Review Committee (TRC) was established. TRC proved to be a crucial alliance in shaping the cleanup process. Along with Sacramento Army Depot staff, TRC members include the Sacramento District of the Corps of Engineers, EPA Region 9, the California EPA, the State Water Resources Board, local congressional staff representatives, and contracted environmental consultants.

TRC's open forum structure has fostered an air of cooperation within the group and has been instrumental in resolving potential problems long before they might delay any remediation efforts. This cooperation has been especially evident in regulatory agency members' participation. These representatives, rather than simply acting as an approval authority and placing themselves at the end of the decision-making process, have acted as true participants. In doing so, they have helped to streamline the direction and efforts involved in the remediation process by providing their expertise to TRC during the early phases of problem solving.

TRC has proven to be indispensable in accomplishing remediation efforts. The depot is well ahead of schedule because of this cooperative relationship and therefore expects to be the first installation removed from NPL. Because of TRC's accomplishments, the depot will be able to achieve a smooth and effective environmental

cleanup. This will be a positive factor for interim and long-term re-use of the Sacramento Army Depot facility.

## **Savanna Depot Activity, Illinois**

### **Soil Treatment**

*(Excerpt from Environmental Update, April 1993)*

The largest mobile incinerator ever brought to an Army installation is currently operating twenty-four hours a day at Savanna Army Depot Activity to clean soil heavily contaminated by TNT and other explosives. A rotary kiln incineration system installed and operated by Weston Services, Inc. is treating soil in which contaminants from wastewater settled into unlined lagoons. The incinerator system is capable of thermally treating more than 20 tons of earth per hour. It will have treated some 25,000 cubic yards of soil when the project is complete.

The on-site treatment at the depot's ammunition washout lagoon area is the first attempt to clean up one of seven contaminated sites which placed the depot on NPL in 1989. The remaining six original sites and 66 additional sites are being investigated as part of the depot's overall remedial investigation/feasibility study.

## **Sunflower Army Ammunition Plant, Kansas**

### **Eastern Bluebird**

*(Excerpt from Environmental Update)*

The Eastern bluebird population is expanding due to the efforts of the bluebird subcommittee of the Hercules Environmental Protection and Enhancement Committee (EPEC) at the Sunflower Army Ammunition Plant. EPEC put up 24 new nest boxes around the plant, bringing the total number of nest boxes to 38. In 1991, the birds built 33 nests using 15 of the boxes; some boxes were used more than

once, a typical nesting characteristic of the Eastern bluebird. To promote a more healthy population of birds, the old nests were removed by subcommittee members after each batch of young left the nest. A total of 120 eggs were produced, and 90 hatched. From those, 83 young were documented to leave the nest, which is a 92.2 percent survival rate.

## **Tobyhanna Army Depot, Pennsylvania**

### **Hazardous Waste Minimization Awards**

*POC: Mike Parrent, (717) 894-7098*

In 1992 Tobyhanna Army Depot was recognized by both the Army and the Commonwealth of Pennsylvania for its environmental programs. The depot received the 1992 Secretary of the Army Hazardous Waste Minimization Award; the 1992 Pennsylvania Governor's Award for Waste Minimization in the Industrial Category for comprehensive waste minimization efforts; the 1992 Secretary of the Army Environmental Quality Award for the overall environmental program; and the 1992 Pennsylvania Governor's Award for Waste Minimization in the Municipal Category. The depot was cited as an excellent example of an Industrial Recycling Program.

## **Tooele Army Depot, Utah**

### **Air Monitoring Program**

*POC: Larry McFarland, (801) 833-3504*

In 1992, Tooele County citizens became concerned about the recent increase in hazardous waste industries locating in the area. They requested that an ambient air quality study be conducted. Many of their concerns and questions centered around possible adverse health affects from dust plumes and noise pollution generated from

open burning/open detonation (OB/OD) at Tooele Army Depot (TEAD) during demilitarization of obsolete conventional munitions.

The citizen's concerns and questions prompted the Tooele County Department of Health to implement the requested study. Due to budget constraints, Tooele County was unable to accomplish this task on their own. Therefore, they solicited the support of both government and private industries in the area. TEAD contributed a loan of more than \$50,000 worth of ambient air analyzers and associated monitoring equipment to the Tooele County Department of Health, and assistance in preparing an ambient air monitoring plan.

Tooele County is using the air monitoring equipment, on loan from TEAD in conjunction with additional equipment provided by other area industries, to conduct a two-year air quality study. The study, which began in the spring of 1993, includes monitoring a wide range of regulated criteria pollutants as well as other non-regulated pollutants of concern. The study is scheduled to be completed in the fall of 1994.

In addition to TEAD's involvement in establishing an Air Monitoring Program in Tooele County, the installation conducted a comprehensive in-house study to determine the impact of OB/OD operations on the environment. This study included an analysis of the effects of meteorologic conditions on noise levels, over-pressure testing to determine the potential for structural damage, seismic evaluations, monitoring of EPA regulated criteria pollutants, and the analysis of dust plumes for toxic metals.

## **Vint Hill Farms Station, Virginia**

### **Disinfecting Sewage Without Chemicals**

*POC: Richard Reisch, (703) 349-6182*

Vint Hill Farms Station, which lies within the sensitive Chesapeake Bay watershed, is using a high-tech, ultra-violet system to disinfect sewage without any chemicals that might harm Chesapeake Bay. Because chlorine is toxic to aquatic life, the operating permit for the sewage treatment plant in Virginia requires zero

measurable chlorine residue in the plant effluent. Meeting this requirement with a traditional disinfection system would require chlorination and dechlorination steps using several hazardous materials, including chlorine and sulphur dioxide.

Vint Hill's system is very complex and expensive. A good knowledge of effluent characteristics is essential to the successful design of an ultraviolet disinfection system. A microcomputer, calibrated for the plant's effluent characteristics, controls the disinfection process. Transmissivity and turbidity determine how well the ultraviolet rays will penetrate the effluent, and the system features 100 percent redundancy. The system installed at Vint Hill costs approximately \$155,000 and can handle an average effluent flow of 250,000 gallons per day.

Because Virginia has very precise specifications for ultraviolet systems, coordination with state regulators was absolutely necessary. Vint Hill ran a pilot program by placing a small modular ultraviolet unit on one of their clarifiers and measured kill rates to show the state how it would work. Now that it has been installed, the system is working very well, with coliform levels far below operating permit requirements.

## **White Sands Missile Range, New Mexico**

### **Equipment Inspection/Condition Coding**

*POC: Phil Heick, (505) 678-1405*

Critical components of the White Sands Missile Range (WSMR) Post Area Water System were inspected and condition-coded for overall physical status, proper operation, and system function in 1990. An engineering/technical assessment of the existing emergency repair supplies and equipment was also conducted. Inventory lists of major supplies and equipment needed to meet identified emergency conditions were compiled. These steps will help WSMR prepare for and be able to respond to most, if not all, environmentally harmful emergencies.

**Appendix A: Installations with Good News by Major Command**

**AMC**

Army Materiel Command, VA  
Army Depot System Command, PA  
Army Test and Evaluation Command, MD  
Holston Army Ammunition Plant, TN  
Iowa Army Ammunition Plant, IO  
Letterkenny Army Depot, PA  
Radford Army Ammunition Plant, VA  
Rock Island Arsenal, IL  
Rocky Mountain Arsenal, CO  
Sacramento Army Depot, CA  
Savanna Depot Activity, IL  
Sunflower Army Ammunition Plant, KS  
Tobyhanna Army Depot, PA  
Tooele Army Depot, UT  
Vint Hill Farms Station, VA  
White Sands Missile Range, NM

**FORSCOM**

Fort Bragg, NC  
Fort Devens, MA  
Fort Hood, TX  
Fort Irwin, CA  
Fort McCoy, WI  
Fort Ord, CA  
Fort Polk, LA  
Fort Ritchie, MD

**TRADOC**

Fort Benning, GA  
Fort Dix, NJ  
Fort Eustis, VA  
Fort Jackson, SC  
Fort Leonard Wood, MO

**Appendix B: Installations With Good News by State**

**California**

Fort Irwin  
Fort Ord  
Sacramento Army Depot

**Colorado**

Rocky Mountain Arsenal

**Georgia**

Fort Benning

**Illinois**

Rock Island Arsenal  
Savanna Depot Activity

**Iowa**

Iowa Army Ammunition Plant

**Kansas**

Sunflower Army Ammunition Plant

**Louisiana**

Fort Polk

**Maryland**

Army Test and Evaluation Command  
Fort Ritchie

**Massachusetts**

Fort Devens

**Missouri**

Fort Leonard Wood

**New Jersey**

Fort Dix

**New Mexico**

White Sands Missile Range

**North Carolina**

Fort Bragg

**Pennsylvania**

Army Depot System Command  
Letterkenny Army Depot  
Tobyhanna Army Depot

**South Carolina**

Fort Jackson

**Tennessee**

Holston Army Ammunition Plant

**Texas**

Fort Hood

**Utah**

Tooele Army Depot

**Virginia**

Army Materiel Command  
Fort Eustis  
Radford Army Ammunition Plant  
Vint Hill Farms Station

**Wisconsin**

Fort McCoy

## Appendix C: Comment Form

To make this document most useful, it is important that the information be updated and supplemented on an ongoing basis. It is anticipated that the resident AEPI MACOM Fellow will continue to gather information and good news from installations, agencies, laboratories and other sources. This document will then be updated biennially to reflect the new material.

Please use this form (attach additional pages if required) to provide your good news, comments, suggestions, etc., for making this document more useful.

Forward all materials to: Kristan Cockerill  
AEPI  
P.O. Box 6569  
Champaign, Illinois 61826-6569

Comments: \_\_\_\_\_

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Your Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Organization: \_\_\_\_\_

## Acronym Glossary

AAPPSO	Army Acquisition Pollution Prevention Support Office
ACS	Army Community Services
AEC	Army Environmental Center
AEHA	Army Environmental Hygiene Agency
ALMC	Army Logistics Management College
AMC	Army Materiel Command
ASAP	Army Environmental Strategy Plans
CD-ROM	Compact Disk-Read Only Memory
CFC	Chlorofluorocarbons
CNG	Compressed Natural Gas
DESCOM	Depot System Command
DNT	Dinitrotoluene
DoD	Department of Defense
DRMO	Defense Reutilization Marketing Office
DSHE	Director of Safety, Health, and Environment
ECO	Environmental Compliance Officer
EMD	Environmental Management Division
EPA	Environmental Protection Agency
EPEC	Environmental Protection and Enhancement Committee
EQO	Environmental Quality Office
FFA	Federal Facilities Agreement
FORSCOM	Forces Command
FY	Fiscal Year
HAAP	Holston Army Ammunition Plant
HCF	Health Care Facility
HCFC	Halogenated Chloroflourocarbons
HMIS	Hazardous Materials Information System
HPP	Historic Preservation Plan
IAAP	Iowa Army Ammunition Plant
IRP	Installation Restoration Program
IRRP	Installation Restoration Research Program
LAAP	Louisiana Army Ammunition Plant
MIDI	Military Item Disposal Information System
MSC	Major Subordinate Command

NCO	Noncommissioned Officer
NEPA	National Environmental Policy Act
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NTC	National Training Center
OB/OD	Open Burning/Open Detonation
ODEP	Office of the Director of Environmental Programs
OTSG	Office of the Surgeon General
PCB	Polychlorinated Biphenyls
POC	Point of Contact
POL	Petroleum, Oil and Lubricant
RAAP	Radford Army Ammunition Plant
RAV	Remedial Action Verification
RCRA	Resource Conservation and Recovery Act
RIA	Rock Island Arsenal
RMA	Rocky Mountain Arsenal
SCS	Soil Conservation Service
TCE	Trichloroethylene
TDY	Temporary Duty
TEAD	Tooele Army Depot
TECOM	Army Test and Evaluation Command
TIE	Toxicity Identification Evaluations
TNC	Tennessee Nature Conservancy
TNT	Trinitrotoluene
TRADOC	Training and Doctrine Command
TRC	Technical Review Committee
TSP	Training Support Packages
UST	Underground Storage Tank
WES	Waterways Experiment Station
WSMR	White Sands Missile Range

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